THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A process for the separation of nickel, cobalt or both from impurity elements selected from one or more of calcium, magnesium, manganese and chloride contained in a leach solution, the process comprising the step of subjecting the leach solution to solvent extraction using a carboxylic acid, a hydroxyoxime and a kinetic accelerator.

2. The process of claim 1, wherein the solvent extraction step comprises contacting the leach solution with an organic solution comprising the carboxylic acid, hydroxyoxime and kinetic accelerator.

3. The process of claim 2, wherein the organic solution comprises a stabilizer against hydroxyoxime degradation.

4. The process of claim 3, wherein the stabilizer reduces oxidation and/or hydrolysis of the hydroxyoxime.

5. The process of claim 3, wherein the stabilizer is an anti-oxidant.

6. The process of any one of claims 1 to 5, wherein the solvent extraction step effects extraction of a large proportion of the nickel, cobalt, copper and zinc into an organic phase, to the extent that these elements are present, with a large proportion of the calcium, magnesium, manganese and chloride being rejected to the aqueous phase.

7. The process of any one of claims 1 to 6, wherein the leach solution contains impurity elements selected from one or more of calcium, magnesium, manganese and chloride, optionally together with copper and/or zinc.

8. The process of any one of claims 1 to 7, wherein the leach solution is a solution that has been subjected to a preliminary iron and/or aluminium precipitation step to precipitate out iron and/or aluminium to leave an aqueous leach solution containing the target elements and impurity elements other than iron and aluminium.

9. The process of any one of claims 1 to 8, wherein the carboxylic acid is 2-methyl, 2-ethyl heptanoicic acid or a cationic exchange extractant having extraction characteristics similar to 2-methyl, 2-ethyl heptanoic acid.

10. The process of any one of claims 1 to 9, wherein the hydroxyoxime is a chelating α-hydroxyoxime.

11. The process of any one of claims 1 to 10, wherein the kinetic accelerator increases the rate of extraction and/or stripping kinetics of nickel.

12. The process of any one of claims 1 to 11, wherein and the pH of the aqueous phase in the solvent extraction step is maintained in the range of from 5.0 to 6.5 to effect extraction of the cobalt and/or nickel into the organic phase.

13. The process of claim 12, wherein the pH of the aqueous phase in the solvent extraction step is maintained in the range of from 5.5 to 6.0.

14. The process of claim 13, wherein the organic phase from the solvent extraction step is subjected to scrubbing.

15. The process of any one of claims 1 to 14, wherein cobalt and nickel are extracted into the organic phase,

and the organic phase is subjected to selective stripping to separate to a significant extent the cobalt from the nickel.

16. The process of claim 15, wherein the selective stripping comprises contacting the organic phase from the solvent extraction with an acidic aqueous solution to yield (a) a loaded strip liquor containing cobalt, and (b) a selectively stripped organic solution containing nickel.

17. The process of claim 16, wherein the acidic aqueous solution used in the selective stripping has a pH in the range of 3.0 to 4.0.

18. The process of any one of claims 15 to 17, wherein the cobalt is recovered from the loaded strip liquor.

19. The process of claim 18, wherein the cobalt is recovered by cobalt precipitation.

20. The process of any one of claims 15 to 19, wherein the nickel is recovered from the stripped organic solution from the selective stripping step.

21. The process of claim 20, wherein the organic solution from the selective stripping step contains nickel and copper, and is subjected to stripping with an aqueous acid solution to separate the nickel into the aqueous phase with only a small amount of the copper, followed by ion exchange to remove the copper, and the nickel is recovered from an eluate of the ion exchange.

22. The process of claim 14, wherein the scrubbed organic solution is stripped to obtain (a) a loaded strip liquor containing nickel and cobalt and copper and zinc to the extent that copper and zinc are present, and (b) a stripped organic solution.

23. The process of claim 22, wherein the loaded strip liquor is subjected to organophosphinic acid solvent extraction.

24. The process of claim 23, wherein the organophosphinic acid solvent extraction produces (a) a loaded organic solution which contains cobalt (and zinc and copper, to the extent they are present), and (b) an aqueous raffinate containing nickel.

25. The process of claim 24, wherein the loaded organic solution from the organophosphinic acid extraction is scrubbed, the scrubbed organic solution containing cobalt (copper and zinc) is subjected to stripping with sulphuric acid at an appropriate pH, the loaded strip liquor containing cobalt (copper and zinc) is subjected to ion exchange to remove copper and zinc present, and cobalt recovered from the eluate.

26. The process of claim 25, wherein nickel is recovered from the aqueous raffinate from the organophosphinic acid extraction.

27. The process of any one of claims 1 to 26, wherein scrubbing is conducted on the organic phase after each solvent extraction.

28. A product recovered by the process according to any one of claims 1 to 27.